CHAPTER 4

INTERNAL CONTROL THROUGH LIFE -CYCLE MANAGEMENT DOCUMENTATION

A. INTRODUCTION

One method of establishing good internal controls is to use the documentation produced throughout the life-cycle of an Automated Informat ion System (AIS) . These documents are described in DoD 7935 .1-STD, DoD Directive 7920.1, and DoD Instruction 7920.2 (references (m) , (n) , and (o)) . Appendix A has been included to show the internal control techniques that need to be considered during the documentation of AIS tasks . Life-Cycle Management (LCM) provides an LCM review and milestone approval structure that identifies key decision points during the time from system inception to system termination or replacement.

B. BACKGROUND

1. LCM is a control process applied to expenditures on AISS and for administering an AIS. It emphasizes early decisions that shape AIS costs and utility and are based on full considerate ion of functional , hardware, software, and telecommunications requirements. The life-cycle of an AIS is composed of six broad phases: Need Justification; Concepts Development; Design; Development; Deployment; and Operat ions. (See Table 4-1 page 4-5) .

2. LCM seeks to achieve the following object ives :

a. Control “expenditures on AISS to ensure that the benefits derived from an AIS are responsive to user needs and accomplished in the most cost-effective manner.

b. Provide a management structure for AIS developments.

c. Establish a standard management discipline to ensure that an AIS is developed, evaluated, and operated at the lowest total overall cost.

d. Provide early visibility of all resource requirements.

e. Promote standardization, and AIS interoperability wherever appropriate.

c. LIFE-CYCLE PHASES

1. Need Justification Phase (Phase 0) . The purpose of this phase is to identify a mission need, validate that need, and recommend the exploration of alternative functional concepts to satisfy the need.

a. Documentation during this phase should address the following concerns such as:

(1) Quantifying the mission deficiencies and goals for improvement.

(2) Characterizing the current and projected environment to include wartime role, if any.

(3) Estimating overall costs to include time and level of effort.

(4) Determining affordability constraints.

(5) Clarifying and focusing the mission needs.

(6) Determining what needs can be satisfied using current capabilities.

(7) Establishing need priorities.

(8) Determining the timing and urgency of the needs.

(9) Security and other vulnerabilities.

b. Documentation Produced during this phase. Mission Need Statement (MNS)*, which takes into account considerations such as Mission Area Identification, and Deficiencies. [*Note: A Mission Need Statement will be prepared for each major AIS in accordance with reference (n)]

2. Concepts Development (Phase 1). The purpose of this phase is to identify and evaluate alternative methods to satisfy the mission need, and to select the best program to implement the required capabilities.

a. Documentation during this phase should address the following concerns:

(1) Defining alternate functional architectural concepts.

(2) Weighing the risks of each workable concept.

(3) Selecting a concept based upon-an adequate feasibility' analysis.

(4) Developing demonstrations for each alternate functional concept, if required.

(5) Conducting a cost-benefit analysis.

(6} Determining an initial cost estimate.

(7) Establishing a configuration management discipline.

(8) Developing an acquisition strategy.

b. Documentation produced during this phase:

(1) Project Management Plan.

(2) Functional Description.

(3) Acquisition Plan.

(4) Cost-Benefits Analysis.

(5) Resources Document.

(6) Preliminary plans adequately describe a concept for training, logistical support, organizational relationships and, if appropriate, operation of an automated system.

(7) System Decision Paper 1 *. [*Note: A System Decision Paper (SDP) will be prepared for each major AIS in accordance with reference (o)]

3. Design (Phase 2). The purpose of this phase is to complete the AIS technical specifications, and validate the selected system design.

a. Documentation during this phase should address the following concerns:

(1) Revalidate mission needs.

(2) Weigh the risks of each alternate design.

(3) Validate AIS and/or Telecommunications adequacy.

(4) Select the best design.

(5) Complete the economic analysis.

(6) Obtain design approvals from functional proponent and technical managers.

(7) Develop a firm baseline for requirements, costs, and schedules.

(8) Plan for new facilities.

(9) Provide for full funding of the program.

b. Documentation produced during this phase:

(1) Data Requirements Document.

(2) Program Specifications.

(3) Data Base Specifications.

(4) System and/or Subsystem Specifications.

(5) Configuration Management Plan.

(6) Economic Analysis.

(7) Plans for training, logistics support, telecommunications, security, integration, and operations have been developed and updated.

(8) System Decision Paper 2 *. [*Note: A System Decision Paper (SDP) will be prepared for each major AIS in accordance with reference (o) 1.

4. Development (Phase 3) . The purpose of this phase is to develop the total AIS, test the completed AIS to ensure that it satisfies missions needs, and prepare for deployment.

a. Documental ion during this phase should address the following concerns:

(1) Completion of the development of the system.

(2) Completion of operational testing and evaluation.

(3) Implementation planning.

(4) Current risk assessment and future risk management actions.

(5) Current requirements, costs, and schedule baselines.

(6) Full funding of the program.

b. Documentation produced during this phase:

(1) Computer programs and data bases.

(2) Users Manual.

(3) Computer Operations Manual.

(4) AIS Security Certification and/or Accreditation.

(5) Deployment and Operations Plans.

(6) Continuity of Operations Plan.

(7) Logistics Support and Training Plans.

(8) Test and Evaluation Plan.

(9) Functional and Physical Configuration Review.

(10) Test Analysis Report.

(11) System Decision Paper 3 *. [*Note: A System Decision Paper (SDP) will be prepared for each major AIS in accordance with (reference (o)].

5. Deployment (Phase 4) and Operations (Phase 5). The purpose of these phases are to: (1) field the AIS in accordance with the approved deployment plan; and (2) operate and maintain the AIS, evaluate its effectiveness, and plan for long-term AIS modernization.

a. Documentation should address the following concerns:

(1) Security procedures.

(2) System reviews and audits.

(3) Formal change control process.

(4) Deployment and Operation schedules.

6. Documentation produced during these phases. Implementation Procedures.

a. Deployment Phase.

(1) Updated SDP.

(2) Updated Baseline Document.

b. Operations Phase.

(1) Updated SDP.

(2) updated Baseline Document.

(3) Existing AIS Modernization Plans.

TABLE 4.1- LIFE-CYCLE MANAGEMENT PHASES- MILESTONES- DOCUMENTATION

MILESTONES	0	I	II	III	IV	V
	NEED JUSTIFICATION Phase 0	CONCEPTS DEVELOPMENT Phase 1	DESIGN Phase 2 (Define / Design)	DESIGN Phase 3 (Define / Design)	DEPLOYMENT Phase 4	OPERATION Phase 5
SDP DOCUMENTATION						
	MNS	ES, PMP, RES, ASP, SUP	TEP			
SDP DOCUMENTATION						
		FD	RD, SS, PS, DS	UM, OM, MM, PT, RT	IP	

MNS - Mission Need Statement
ES - Executive Summary
PMP - Project Management Plan
RES - Resource Document

ASP - Acquisition Strategy Plan
SUP - Support Plans
TEP - Test and Evaluation Plan

FD - Functional Description
RD - Data Requirements Document
SS System/Subsystem Specification

PS - Program Specification
DS - Data Base Specification
UM - Users Manual

OM - Computer Operation Manual
MM - Program Maintenance Manual
PT - Test Plan

RT - Test Analysis Report
IP - Implementation Procedures